

Remarks

Applicants appreciate the time taken by the Examiner to review Applicant's present Application. This present Application has been carefully reviewed in light of the Official Action mailed June 23, 2003. Applicants are amending claims 1, 2, 7, 13, 14, and 19. Applicants respectfully submit that the amendments do not add new matter to the current Application. Applicants respectfully request reconsideration and favorable action for the present Application.

Rejections under 35 U.S.C. § 102

Applicants request the withdrawal of the rejection of claims 1-24 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,619,709 ("Caid"). Claim 1 is directed to a method that includes an act of expanding a scope of a search from a first query to a second query. The other independent claims have language. Caid does not teach expanding the scope of a search, and if Caid were to be used to generate a query, it would narrow the scope of the search rather than expanding it.

Passages of Caid cited in the Office Action address the creation of a database, not the searching of that database. Below, the method of Caid, as understood, is described, next cited passages of Caid are compared to claim language, and then an example is given to further illustrate the differences between Caid and the invention with a focus on claim 1.

Caid teaches creating and saving summary vectors generated from context vectors, which in turn are created from a document. The creation of the context vectors involves removing uninteresting words (e.g., common words and prepositions) from the document, locate and mark multiple words that are to be used as a single word (e.g., "world series," "best man"), and reducing words to word stems. See column 5 at line 64 to column 6 at line 5 of Caid. For each target, the context vector of the neighbors influences the context vector of the target word stem. See column 6 at lines 54-55 of Caid.

The analysis of the word stems starts with the first word stem as the target and then moves to the next word stem (i.e., the second word stem become the new target word stem).

The analysis is repeated for the rest of the word stems. See column 6 at lines 26-30 and the example as shown in FIGs. 2A-2F and related text of Caid.

Note that these passages do not involve a query. Also, the pre-processing will produce the same or fewer words than the corresponding passage. For example, "Mary had a little lamb; its fleece was white as snow," may result in word stems of "Mary little lamb fleece white snow" because common words are removed. Therefore, generating context vectors will be performed on fewer words rather than more. Also, Caid does not teach substituting a "friend" keyword (e.g., sibling or higher level node in a hierarchy) for the term in the passage (i.e., sheep for lamb) or use a closely related term in addition to a term in the passage (i.e., include both lamb and sheep). A search of sheep may not discover the document based on the passage when using Caid. By focusing the context of a word, Caid effectively narrows the scope of the passage rather than expanding it.

The "expanding" to which the Office Action is believed to refer, is adjusting the size of the window around a target word stem to include more neighboring word stems. See column 6 at lines 32-37 of Caid. Referring to the prior example, if the target word stem is "lamb" and the window extends one word stem in both directions from the target word stem, the window will include the target word stem "lamb" and the neighbor word stems "little" and "fleece." If the window is expanded to two word stems, "Mary" and "white" will also be neighbor word stems for the target word stem of "lamb." By using the neighboring word stems with respect to the targeted word stem, the context of "lamb" within the passage may be better understood. Therefore, just by using the window with two word stems on either side of "lamb," the passage is probably related to a woman, some interaction with a lamb, and something related to fleece. The passage is probably not related to ways of cooking lamb because of the word "fleece." Therefore, the use of the context vectors actually narrows the scope of the passage rather than expanding it because "lamb" is better understood in its context. Caid will not present the user with all documents having instances of "lamb."

Each of the cited passages is addressed with respect to the rejections of the independent claims, and more particularly, the language in claim 1. FIG. 2A and column 6 at lines 38-45 of Caid describe an example of the window definition for the first few word stems of a sample document during processing of a document. FIG. 2B and column 6 at lines 45-47 of Caid teaches that when the target word stem "antitrust," the neighbor word stems are "Federal,"

"law," "simple," and "commercial." The passage does not address queries, let alone expanding the scope of a search from a first query to a second query. Column 5 at lines 26-36 of Caid teaches how the context vector generation scheme produces vectors, and performing a simple dot product operation on associated context vectors to determine how similar they are to each other. The passage does not teach searching a database using a query. Column 5 at lines 37-48 of Caid addresses the orientation of context vectors. The passage does not teach finding identifiers for information objects that correspond to a query.

An example using both the Caid method, as understood, and an embodiment of the present invention help to distinguish the two. Assume that the document includes the following, "Mary had a little lamb; its fleece was white as snow," and the user is interested in finding documents that address the natural colors of sheep's wool.

Under Caid, the document has word stems of "Mary little lamb fleece white snow." If a query input is "What are the natural colors of sheep's wool?", a query vector may include "natural color sheep wool." Because none of the word stems from the document (i.e., Mary, little, lamb, fleece white, snow) match any of the word stems in the query (i.e., natural, color, sheep, wool), the document should not be found using Caid.

Compare Caid to an embodiment of the present invention. The user may input and the computer receives "sheep" and "wool" as a query. The claimed method can be used to expand the scope of the search by examining each of the input words. For "sheep," "lamb" and "mammals" may be examined. "Lamb" may be a subset of sheep, and the method and system can use the hierarchical tree to determine that "lamb" will be found any time "sheep" is input. On the other hand, "mammals" may be too large and the search is not expanded to include it. "Fleece" and "yarn" may be examined and determined to be "friends" of the keyword "wool." Both "fleece" and "yarn" may be added. In one embodiment, the software can include instructions to carry out the method as described in this paragraph to expand the search. Therefore, query can be automatically expanded to effectively go from:

sheep AND wool

to

sheep AND (wool OR fleece OR yarn)

The expanded query can be used and will find the document because lamb will be found with the "sheep" keyword, and the "wool" portion of the query was expanded to look for "fleece."

Not only does Caid not anticipate the present invention, the present invention would not be obvious in view of Caid because Caid and the present invention effectively go in opposite directions. Modifying the method in Caid to be used for queries would effectively narrow, and not expand, the scope of the search based due to the "meaning sensitivity" gained from neighboring word stems. One of ordinary skill in the art would understand Caid as trying to be more of a filter to reduce the number of documents to be presented in response to a query, so that the user is more likely to only retrieve the most relevant documents.

An embodiment of the present invention goes in the other direction. Queries performed using the present invention expand the scope of the search based on using more generic or related words. Expanding the scope of the search goes against the teachings of Caid, because the claimed invention is more likely to retrieve relevant documents that are less relevant. For example, "yarn" in the example may not only address wool, but also include other materials, such as cotton, nylon, etc. Over-inclusion, which Caid is at least implicitly trying to avoid, is more likely to occur with an embodiment of the present invention. However, with over-inclusion comes the greater likelihood of finding the document that is relevant even though the user did not match the words in the document. The present invention lets the user decide whether a document is relevant, rather than having a document filtered out by a computer, which the user may never knows exists even though he or she may need that document.

Applicants respectfully submit that the other independent claims (claims 7, 13, and 19) are not anticipated by Caid for similar reasons. All other claims are dependent from one of those independent claims are not anticipated by Caid at least for the reasons given for their corresponding independent claim.

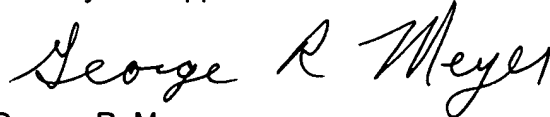
Applicants have amended some of the claims to remove limitations that were added in prior to the current Office Action. Removing limitations broadens, and does not narrow the scope of the claims. Applicants added "a scope of a search from" (in reference to the word "expanding\_"), so that the claims literally reflect what those of ordinary skill would have realized upon reviewing the claims after reading the entire patent application. Therefore, the claims, in their current form, are broader than they were before the amendment and are of the same scope or potentially broader than the claims as originally filed.

Applicants have now made an earnest attempt to place this case in condition for allowance. For the foregoing reasons and for other reasons clearly apparent, Applicants respectfully request full allowance of currently pending claims.

The Commissioner is hereby authorized to charge any fees or credit any overpayments to Deposit Account No. 50-0456 of Gray Cary Ware & Freidenrich, LLP.

Respectfully submitted,

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